

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Presently Amended): A process for improving the pour point of hydrocarbon feeds, wherein the feeds are comprised of paraffins containing more than 10 carbon atoms, comprising: bringing the feed into contact with a catalyst containing at least one dioctahedral 2:1 phyllosilicate and at least one hydrodehydrogenating element in the metallic form,

wherein the phyllosilicate is in the form of sheets and has an interplanar distance of at least 2.00×10^{-9} m.

Claim 2 (Previously Presented): A process according to claim 1, wherein the space between the phyllosilicate sheets comprises pillars based on at least one oxide of at least one element selected from elements from groups IVB, VB, VIB, VIII, IB, IIB, IIA and IVA.

Claim 3 (Previously Presented): A process according to claim 2, wherein the pillars are based on at least one oxide selected from the group SiO_2 , Al_2O_3 , TiO_2 , ZrO_2 and V_2O_5 .

Claim 4 (Previously Presented): A process according to claim 1, wherein the phyllosilicate contains fluorine.

Claim 5 (Previously Presented): A process according to claim 2, wherein the interplanar distance is at least 2.65×10^{-9} m.

Claim 6 (Previously Presented): A process according to claim 2, wherein the interplanar distance is at least 3.0×10^{-9} m.

Claim 7 (Previously Presented): A process according to claim 2, wherein the interplanar distance is at least 3.3×10^{-9} m.

Claim 8 (Previously Presented): A process according to claim 1, wherein the catalyst further comprises at least one compound selected from alumina, silica, magnesia, titanium oxide, zirconia, titanium phosphates, zirconium phosphates, boron oxide and charcoal.

Claim 9 (Presently Amended): A process according to claim 1, wherein the hydrodehydrogenating element is a ~~noble~~-group VIII noble metal.

Claim 10 (Previously Presented): A process according to claim 9, wherein the element is selected from platinum and palladium.

Claim 11 (Presently Amended): A process according to claim 1, wherein the process is carried out at 170-500°C, at 1-250 bars, at an hourly space velocity of $0.05-100 \text{ h}^{-1}$, and in the presence of 50-2000 liters ~~litres~~ of hydrogen per liter ~~litre~~ of feed.

Claim 12 (Previously Presented): A process according to claim 1, wherein the feed is selected from kerosenes, jet fuels, middle distillates, vacuum residues, gas oils, FCC middle distillates, hydrocracking residues, base stock, synthesized paraffins from the Fischer-Tropsch process, polyalphaolefins, synthesized oils and n-alkylcycloalkanes.

Claim 13 (Presently Amended): A process according to claim 1, wherein said catalyst for improving the pour point of hydrocarbon feeds, the catalyst comprises comprising:

at least one dioctahedral 2:1 phyllosilicate, and

at least one hydrodehydrogenating element in the metallic form,

wherein the phyllosilicate is in the form of sheets and has an interplanar distance of at least 3.3×10^{-9} m,

~~and~~ wherein the space between the phyllosilicate sheets comprises pillars based on at least one oxide selected from the group SiO_2 , Al_2O_3 , TiO_2 , ZrO_2 and V_2O_5 ,

~~and~~ wherein the phyllosilicate contains fluorine,

~~and~~ wherein the hydrodehydrogenating element is platinum or palladium,

and wherein the catalyst further comprises at least one compound selected from alumina, silica, magnesia, titanium oxide, zirconia, titanium phosphates, zirconium phosphates, boron oxide and charcoal.

Claim 14 (Previously Presented): A process according to claim 1, wherein said feed contains paraffins having 15 to 50 carbon atoms.

Claim 15 (Presently Amended): A process according to claim 1, wherein the hydrodehydrogenation element is Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, or Pt, or is a combination of at least one group VIII, non noble, metal or compound and at least one group VIB metal or compound.

Claim 16 (Previously Presented): A process according to claim 1, wherein said catalyst further contains a matrix.

Claim 17 (Previously Presented): A process according to claim 4, wherein the mole ratio F/Si = $y/(4-x)$ in the phyllosilicate is 0.1 to 4.

Claim 18 (Previously Presented): A process for preparing a dioctahedral 2:1 phyllosilicate catalyst comprising:

suspending dioctahedral 2:1 phyllosilicate, preferably in its ammonium form (NH_4^+), in a solution of a surfactant with a concentration in the range 0.01 mole/litre to 1 mole/litre,

after a contact period of 5 minutes - 12 hours, during which the suspension stirred, filtering the suspension, washing with distilled water, and drying in air or an inert gas at a temperature of 40°C to 150°C for a period of 5 minutes to 24 hours,

contacting the dioctahedral 2:1 phyllosilicate with a mixture comprising:

- (i) at least one RNH_2 type primary amine or a $\text{R}'\text{RNH}$ secondary amine, where R' and R are carbon-containing groups having 1 to 16 carbon atoms;
- (ii) at least one alkoxide of an element or a mixture of alkoxides, the element being selected from groups IVB, VB, VIB, VIII, IB, IIB, said alkoxides being of the formula

$M(OR)_n$, where M is said element, n is the valency of said element, and R is in each case independently alkyl, isoalkyl, naphthenyl or an aromatic, wherein contacting is conducted for a period of 5 minutes to 12 hours, filtering the resultant bridged dioctahedral 2:1 phyllosilicate, and drying in air or in an inert gas at a temperature of 40°C to 150°C for a period of 5 minutes - 24 hours, and calcining at a temperature generally in the range 450-800°C.

Claim 19 (Previously Presented): A process according to claim 1, wherein said hydrodehydrogenating element is a combination of at least one group VI metal or compound and at least one group VIII metal or compound, wherein the total concentration of group VI and group VIII metals, expressed as the metal oxides with respect to the support, is 5% to 40% by weight, and the weight ratio, expressed as the metallic oxides, of group VIII metals to group VI metals is 0.05 to 0.8.

Claim 20 (Previously Presented): A process according to claim 1, wherein the catalyst contains phosphorous in an amount less than 15% by weight, expressed as phosphorous oxide P_2O_5 , with respect to the support.

Claim 21 (Previously Presented): A process according to claim 1, wherein the feed to be treated is a cut with an initial boiling point of more than about 175°C.

Claim 22 (Previously Presented): A process according to claim 1, wherein the reaction is conducted at a temperature of 170°C to 500°C and a pressure of 1 to 250 bar, and the hourly

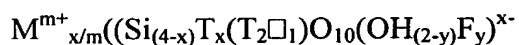
space velocity, expressed as the volume of feed injected per unit volume of catalyst per hour is 0.05 - 100 h⁻¹.

Claim 23 (Previously Presented): A process according to claim 1, wherein the feed and the catalyst are brought into contact in the presence of hydrogen, and the amount of hydrogen used, expressed in liters of hydrogen per liter of feed, is 50 - 2000.

Claim 24 (Previously Presented): A process according to claim 1, wherein the quantity of nitrogen compounds in the feed to be treated is less than about 200 ppm by weight, the sulphur content of the feed is below 1000 ppm by weight, and the quantity of metals in the feed is less than 50 ppm by weight.

Claim 25 (Previously Presented): A process according to claim 1, wherein the feed undergoes an initial hydrotreatment.

Claim 26 (Previously Presented): A process according to claim 1, wherein said dioctahedral 2:1 phyllosilicates, before bridging, is of the formula:



wherein

T is B, Al, Ga or iron;

M is at least one compensating cation selected from the group formed by cations of elements from groups IA, IIA and VIII, organic cations containing nitrogen, the ammonium cation, and rare earth cations;

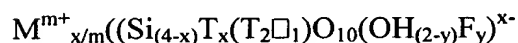
m is the valency of cation M;

x is a number in the range 0 to 2, preferably in the range 0.1 to 0.8;

y is greater than 0 and 2 or less; and

represents an octahedral cavity.

Claim 27 (Presently Amended): A process catalyst according to claim 13, wherein said dioctahedral 2:1 phyllosilicates, before bridging, is of the formula:



wherein

T is B, Al, Ga or iron;

M is at least one compensating cation selected from the group formed by cations of elements from groups IA, IIA and VIII, organic cations containing nitrogen, the ammonium cation, and rare earth cations;

m is the valency of cation M;

x is a number in the range 0 to 2, preferably in the range 0.1 to 0.8;

y is greater than 0 and 2 or less; and

represents an octahedral cavity.

Claim 28 (Presently Amended): A process according to claim 1, wherein catalyst is prepared by a process comprising:

suspending dioctahedral 2:1 phyllosilicate, ~~preferably in its ammonium form (NH_4^+)~~, in a solution of a surfactant with a concentration in the range 0.01 mole/liter ~~mole/litre~~ to 1 mole/liter ~~mole/litre~~,

after a contact period of 5 minutes - 12 hours, during which the suspension stirred, filtering the suspension, washing with distilled water, and drying in air or an inert gas at a temperature of 40°C to 150°C for a period of 5 minutes to 24 hours,

contacting the dioctahedral 2:1 phyllosilicate with a mixture comprising:

- (i) at least one RNH_2 type primary amine or a $\text{R}'\text{RNH}$ secondary amine, where R' and R are carbon-containing groups having 1 to 16 carbon atoms;
- (ii) at least one alkoxide of an element or a mixture of alkoxides, the element being selected from groups IVB, VB, VIB, VIII, IB, IIB, said alkoxides being of the formula $\text{M}(\text{OR})_n$, where M is said element, n is the valency of said element, and R is in each case independently alkyl, isoalkyl, naphthenyl or an aromatic,

wherein contacting is conducted for a period of 5 minutes to 12 hours,

filtering the resultant bridged dioctahedral 2:1 phyllosilicate, and drying in air or in an inert gas at a temperature of 40°C to 150°C for a period of 5 minutes - 24 hours, and

calcining at a temperature of generally in the range 450-800°C.

Claim 29 (New): A process according to claim 14, wherein said feed contains paraffins having 15 to 40 carbon atoms.

Claim 30 (New): A process according to claim 15, wherein the hydrodehydrogenation element is a combination of at least one group VIII, non noble, metal or compound and at least one group VIB metal or compound.

Claim 31 (New): A process according to claim 1, wherein said feed has an initial boiling point of at least 280°C.

Claim 32 (New): A process according to claim 1, wherein said feed has an initial boiling point of at least 380°C.

Claim 33 (New): A process according to claim 1, wherein said feed has a pour point of more than 0°C.

Claim 34 (New): A process according to claim 1, wherein after said feed is contacted with said catalyst it has a pour point of below 0°C.

Claim 35 (New): A process according to claim 1, wherein after said feed is contacted with said catalyst it has a pour point of below -10°C.

Claim 36 (New): A process according to claim 1, wherein said feed contains more than 30 wt% of paraffins containing more than 10 carbon atoms.

Claim 37 (New): A process according to claim 1, wherein said feed contains more than 60 wt% of paraffins containing more than 10 carbon atoms.